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Information About Estuaries and Near Coastal Waters Winter 1995, Volume 5, Number 1

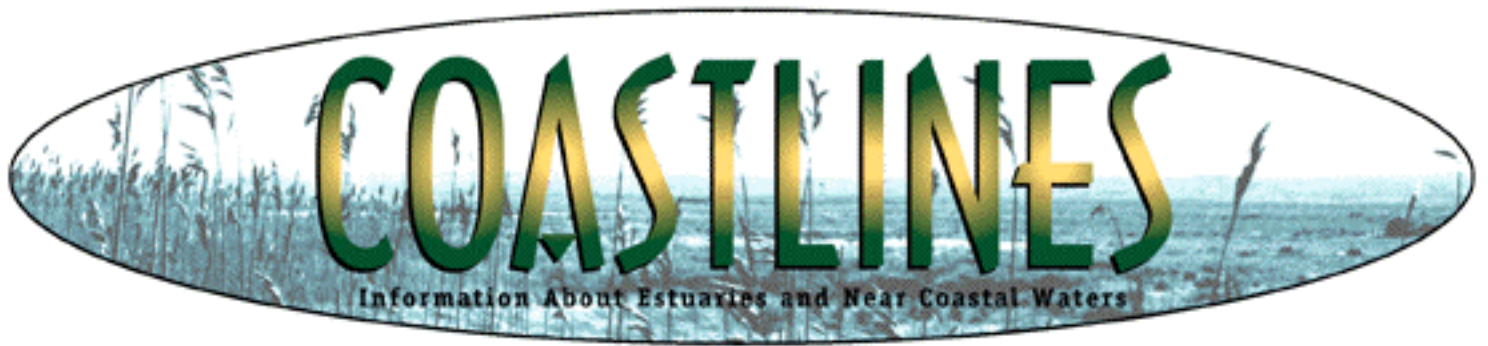
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A U.S. Supreme Court Decision: Water Quantity Impacts Water Quality

States have the right to place conditions on water quality certificates issued pursuant to section 401 of the Clean Water Act (CWA) that are designed to protect the biological integrity of a body of water. So said the U.S. Supreme Court in a May 31, 1994, decision involving the City of Tacoma v. the State of Washington Department of Ecology. Tacoma proposed to construct a hydroelectric dam, and the State issued a "water quality certification" for the project that required Tacoma to maintain a minimum instream flow to protect salmon and steelhead in the Dosewallips River.

Tacoma worked with state, federal, and tribal agencies to identify a minimum flow that would protect salmon and steelhead in the section of river between the dam and the powerhouse out of which most of the natural stream flow would be diverted during project operation. But the parties reached an impasse, and when the State imposed minimum flow conditions on the project, Tacoma appealed.

Supreme Court Proceeding

The Supreme Court agreed with the State's contention that the federal CWA gives states power to impose minimum instream flows on rivers affected by hydroelectric dams. The 7-2 decision holds that states

have the authority to assess and regulate a hydroelectric dam's impact on water quality and its fishery resource.

In reaching its conclusion, the Court rejected Tacoma's argument that the minimum flow condition was an attempt to regulate water quantity, not quality, and was therefore beyond the authority provided to the states by the CWA. Tacoma's proposed distinction between water quality and quantity was found to be "artificial" by the Court, which concluded that there is an obvious relationship between the two.

"Protection of water quality, salmon and steelhead have received a dramatic boost," said Washington Attorney General Christine Gregoire. "This decision is particularly significant today, given the importance of water quality and the imperiled status of our fish runs."

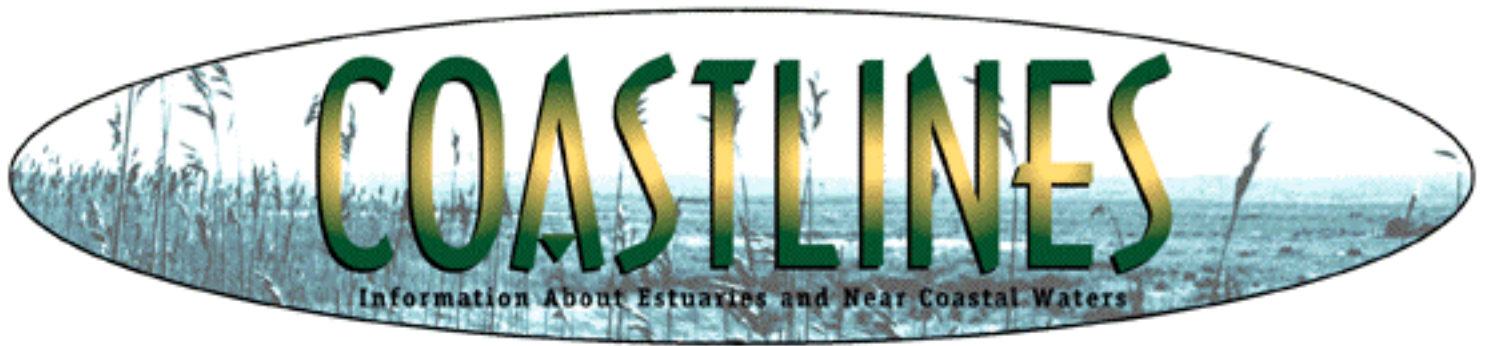
Key to the decision was the Court's ruling that both "designated uses" (i.e., uses identified in the water quality standards as appropriate for the water body in question), and existing uses (i.e., those uses currently existing in the stream), are independently protectable. The Court reasoned that salmon and steelhead usage of the Dosewallips River is both a designated and an existing use and that the minimum flow condition is an appropriate way to protect this use.

Nationwide Support

"This is a landmark ruling," said Gregoire, who argued the State's position before the Court. "We were joined by 45 states in our position. Now states can play a major role in the process of licensing and relicensing hydroelectric dams and will be able to ensure water quality and the fishery resource are protected in that process."

"It is very satisfying after a long, hard-fought struggle, that the Supreme Court has upheld this vital approach to protect our State's water quality," said Ecology Deputy Director Terry Husseman.

Contact: Jay Manning, Senior Assistant Attorney General for the State of Washington, (206) 459-6158. Mr. Manning contributed to this article.



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Possible Ramifications of the Decision*

The 401 certification process applies to "any" application for a federal license or permit which "may" result in a discharge to navigable waters. Because the Court made it clear that the states can act to protect the physical and biological integrity of their waters, as well as impose conditions based on specific numeric criteria, the states' authority would seem to apply equally to nonpoint as well as to point source discharges from such activities as grazing and timber practices, so long as a federal permit or license can be said to be involved.

This also follows from the fact that the Court relied on EPA's interpretation of the provision (which is EPA's to administer) that not just pollutants, but all pollution, is covered by the certification requirement. Moreover, the statute itself says certification is required for "any activity" which may result in "any discharge."

It has always been clear that section 401 applies to the literally hundreds of thousands of CWA section 404 permits granted by the Corps of Engineers each year. But now, the clear application of section 401 to *any* alteration of the biological and physical integrity of the waters, not just to point source discharges of pollutants, should provide states with much more ammunition in their arsenals to protect water quality against degradation and non-attainment from activities requiring section 404 approval.

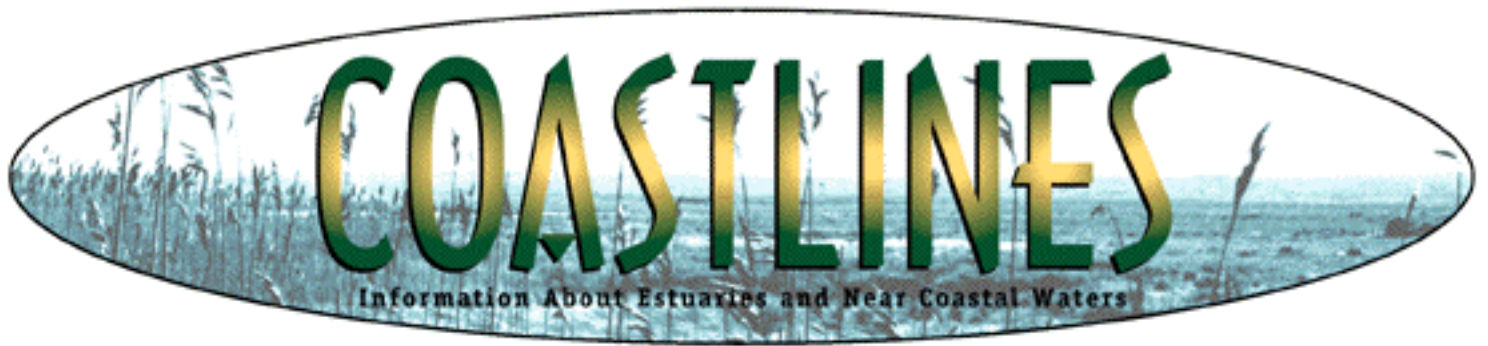
Put simply and practically, any activity which arguably may have an impact on water quality and is federally permitted is subject to the 401 certification requirement. The Court found that states could protect not only existing uses, but also designated uses, including recreation, drinking water, and even aesthetic enjoyment. Therefore, the states may act to block migration of salmon to upstream reaches.

The Court's holding that water quality and quantity are inseparable would seem to authorize EPA to require the states to adopt flow standards to attain the designated uses of their waters. Whether EPA or the states could, in turn, require a reallocation of existing water rights to meet flow standards and withstand takings claims is the more difficult issue.

Another possible ramification of the case relates to the enforceability of water quality standards pursuant to the citizen suit provision of the CWA. If a certain designated use is not being attained because of - or an existing use is being threatened by - a particular activity, can a citizen suit be brought to enjoin the activity?

If states and Indian tribes are to maintain the broad authority to condition any federal license or permit which has the potential of affecting water quality, they have a corollary obligation to have a rational substantive and procedural basis for doing so. States must allocate more resources to water quality certification and develop programs for guiding their determinations. For its part, EPA could provide more guidance on the lingering questions (e.g., exactly which permits are covered?). These points have been made before, but they have taken on significantly more urgency since the Court issued its decision.

** Excerpted from an article in the National Environmental Enforcement Journal by Katherine P. Ransel, co-director of the Northwest Office of American Rivers in Seattle, Washington. In this case, she represented a broad coalition of conservation and fishing organization both in the Washington Supreme Court and the U.S. Supreme Court.*



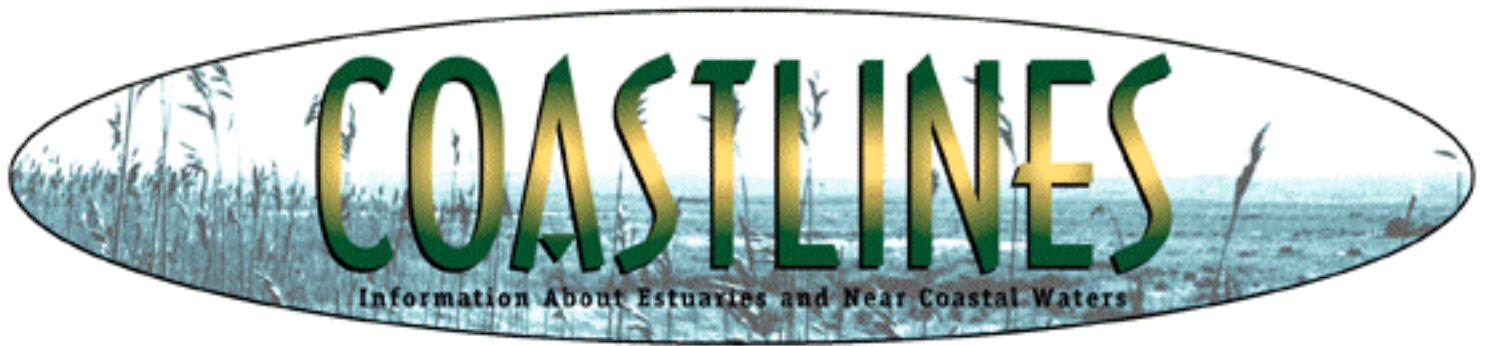
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Atmospheric Deposition

Nitrogen Loading from Above

The Summer 1994 issue of *Coastlines* reported on watershed modeling in the Chesapeake Bay watershed. Atmospheric deposition of nitrogen is being analyzed in many areas of the eastern United States as a significant part of the total inventory of nutrient loading to watersheds. In this issue, investigations by two neighboring National Estuary Programs in Florida, which have very different ideas about the impacts of atmospheric loading, are explored.



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Atmospheric Deposition in Tampa Bay

As recently as 1991, scientists and resource managers assumed that atmospheric deposition had minimal effect on water quality in Tampa Bay. However, a recently completed nitrogen loading budget conducted for the Tampa Bay National Estuary Program (TBNEP) now suggests that up to 27% of the nitrogen entering the Bay comes from wetfall (rain-carried) and dryfall (air-carried) directly deposited to the Bay's surface, making this source second only to stormwater as the largest Bay nitrogen loading source.

If analyses include atmospheric deposition to the surrounding watershed (which enters the Bay as stormwater), EPA-sponsored studies indicate that as much as 67% of the total nitrogen load delivered to the Bay is believed to originate from atmospheric deposition.

"Emissions from power generation facilities, waste incineration, mining, and fertilizer processing contribute to the total, with coal-fired power plants producing the majority of the stationary source emissions," said Holly Greening, Program Scientist at the TBNEP. "Mobile sources (vehicles) are also substantial contributors of atmospheric nitrogen in the Tampa Bay watershed."

Atmospheric deposition also conveys toxic substances, including heavy metals, PCBs, and pesticides. A recent toxics materials loading budget for Tampa Bay indicates that atmospheric deposition is a major

source of cadmium, chromium, and copper, and contributes to iron, lead, mercury, and zinc loadings. Atmospheric deposition is the only measured source of PCBs, and also contributes to chlordane, DDT, and dieldrin loadings. Ongoing monitoring in Tampa Bay sponsored by TBNEP and local governments will better define the spatial distribution of atmospheric deposition (nutrients, heavy metals, and pesticides) throughout the watershed.

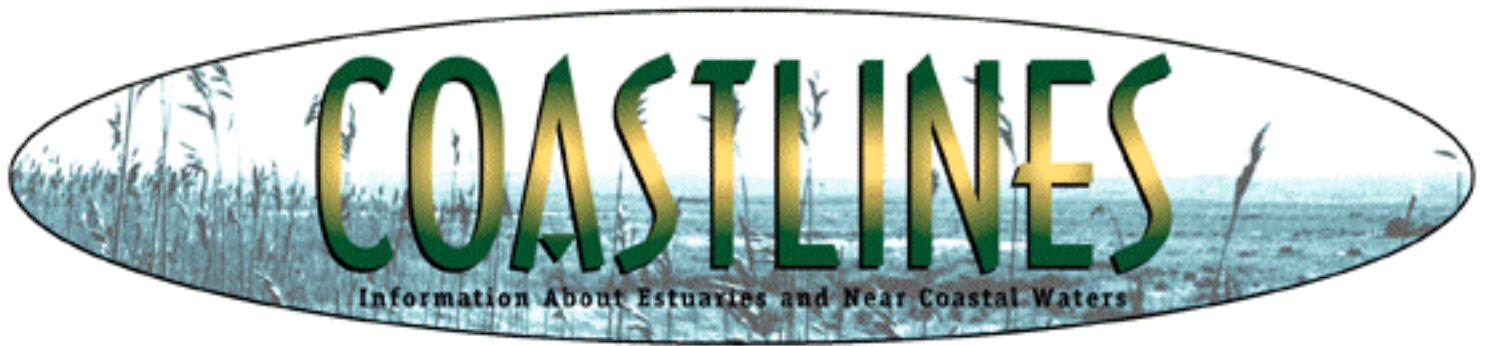
[Charts of Tampa Bay Annual Loads](#)

The relationship between the sources of emissions and deposition in the Tampa Bay area is yet to be determined. "Some of these airborne pollutants may originate hundreds, or even thousands, of miles from Tampa Bay," said Greening. "We do know that stationary sources in the Tampa Bay watershed are a major source of emissions of nitrogen compounds and toxic materials, but we don't know what percentage of the deposition here is contributed by those sources versus remote sources."

Atmospheric deposition in the Tampa Bay area is expected to remain a problem as population, power consumption, and motor traffic increase. The population of the region is expected to increase 30% by the year 2010. Air pollution associated with this growth will be mitigated in part by provisions of the 1990 Clean Air Act, which cap nitrogen oxide emissions and require utilities to increase conservation initiatives, but other reductions will also be necessary to avoid excess loading to the Bay.

To effectively manage and reduce deposition, efforts must be coordinated at the regional and national level. TBNEP has recently requested funding for an air transport/deposition modeling project to determine the sources and relative contributions of nitrogen and toxic materials that are deposited in the Bay and its watershed. The TBNEP is also developing potential management options to address atmospheric deposition to Tampa Bay. The strategy will emphasize long-range planning and permitting, energy conservation, public education, and monitoring and research.

Contact: Holly Greening, TBNEP Scientist, (813) 893-2765; fax (813) 893-2767.



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Atmospheric Deposition of Hydrocarbons

While Tampa Bay, Sarasota Bay, and others focus on the issue of nitrogen loading from atmospheric deposition, Galveston Bay scientists are concerned with the possible risk of hydrocarbon contamination in seafood from atmospheric sources.

The presence of hydrocarbons in seafood taken from Galveston Bay has led to questions about atmospheric deposition. Findings indicate a need for studies to determine the source of hydrocarbon combustion products found in seafood taken from the estuarine system.

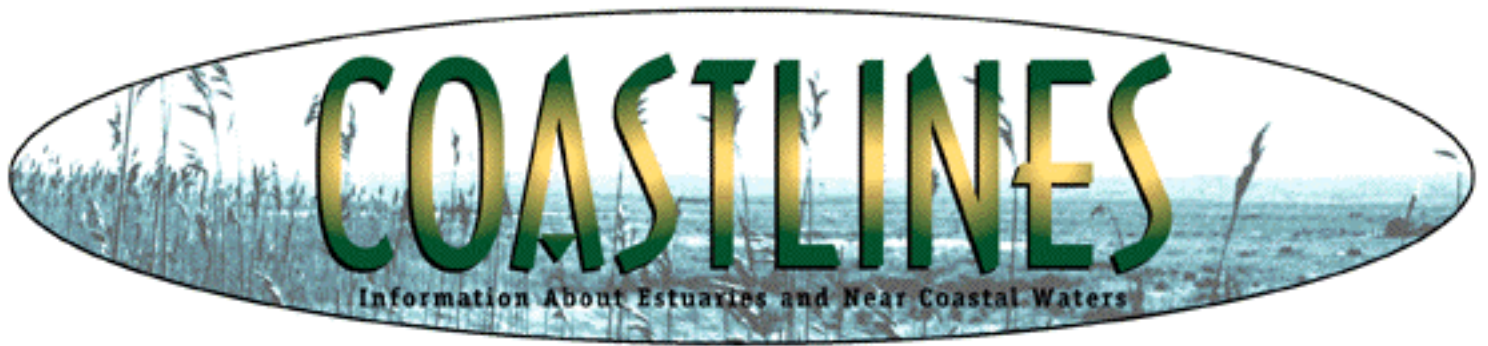
"At this time, we have little data on atmospheric deposition in our bay system," said Dr. Frank S. Shipley, Executive Director of the Galveston Bay National Estuary Program (GBNEP). "However, a seafood study performed by Texas A&M University indicates that there could be some cancer risk caused by compounds that could come from the atmosphere." The risk was only significant for high consumers, particularly subsistence fishermen, added Shipley.

The study, conducted as part of the GBNEP research and planning effort, was performed to determine

cancer risks from consumption of locally caught oysters, blue crabs, spotted seatrout, black drum, and southern flounder. Seafood tissue was tested for heavy metals, hydrocarbons, pesticides, and PCBs.

"Most of the cancer risk was associated with PCB and PAH (polycyclic aromatic hydrocarbon) concentrations, with PCBs usually providing a larger portion of the overall risk," said Shipley. "Because these are combustion products, we wonder if the Galveston Bay system's proximity to Houston and the high concentration of transportation and industry along our coastline may contribute to the problem."

Contact: M. A. Bengtson, Public Participation Director for the GBNEP, (713) 332-9937.



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New Policy on Combined Sewer Overflows

EPA estimates that combined sewer overflows (CSOs) annually discharge 1.2 trillion gallons of raw sewage and stormwater directly into streams, lakes, and estuaries across the country during major storm events. CSOs occur when older-design sewer systems, which collect both rainwater runoff and wastewater in the same sewer, are flooded with flow during some storm events. In these situations, the combined wastewater overflows untreated into the nearest body of water. Beach and shellfish bed closures, human health problems, fish kills, and high drinking water treatment costs have been linked to CSOs.

On April 19, 1994, EPA published a new national policy to control CSOs, giving communities the flexibility necessary to find affordable solutions to the problem. The policy, negotiated with municipalities, environmental groups, and states, is expected to prompt communities to commit to long-term strategies that will ultimately result in attainment of water quality standards.

Under the policy, states are encouraged to coordinate the CSO planning process with the review and revision of state water quality standards. Also, municipalities would use a targeted approach, giving

highest priority to environmentally sensitive receiving waters. The policy instructs municipalities to work with EPA, states, and water quality groups to develop long-term CSO control plans, evaluate control options, and select a workable approach. Finally, the policy notes that the financial capability of a municipality may be considered in the development of a CSO control implementation schedule.

The policy requires communities to implement nine minimum controls by 11/1/97 (see the article titled "Key Components of the Policy"). While the controls are not directly enforceable, they effectively become so by being incorporated into permits, judicial orders, or administrative orders. Elements of the policy will be incorporated into National Pollutant Discharge Elimination System (NPDES) permits, which are issued every five years by the state or EPA to facilities that are classified as point source dischargers. During the first permit cycle (the first time that permit renewal occurs since the policy became effective), it is expected that EPA will require compliance with the nine minimum controls and development of a long-term plan. During the second permit cycle, construction of facilities to correct the problem may be required.

Two approaches can be used by municipalities to establish water quality standards compliance - the "presumption" approach or the "demonstration" approach. Under the presumption approach, compliance is presumed if one of three performance criteria are met:

- No more than four overflow events per year that aren't receiving minimum treatment (typically primary clarification and disinfection);
- Elimination or capture for treatment (primary clarification/disinfection) of at least 85% of the combined sewage collected for treatment;
- Elimination or reduction of mass of pollutants attained in criteria two that are causing water quality problems.

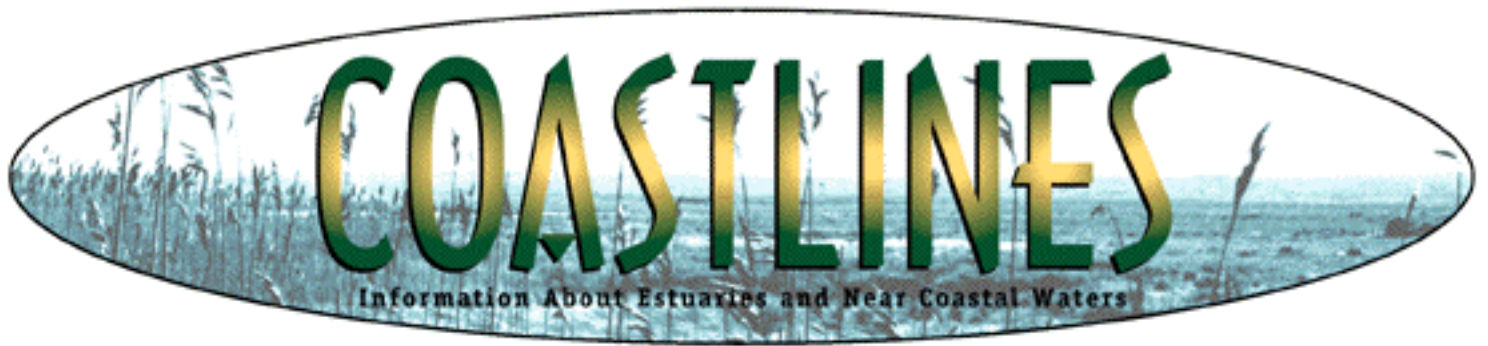
Under the demonstration approach, the municipality is required to demonstrate how standards will be attained at the time of plan preparation. Regardless of which approach a municipality selects, compliance with water quality standards must be demonstrated by water quality monitoring conducted at the conclusion of plan implementation.

About 1,100 communities, mostly in the northeast and Great Lakes, will be affected by the new policy; "Most communities are likely to have to construct additional controls to store, treat, or eliminate overflows," said Ross Brennan, National CSO Program Manager. According to EPA, the policy will be incorporated into National Pollutant Discharge Elimination System (NPDES) permits or "other appropriate enforcement mechanisms. "EPA will place a high priority on issuing permits that contain CSO controls. Communities that begin to characterize their systems, implement the nine minimum controls, and develop long-term plans will benefit greatly when their permits are up for reissuance," said Brennan.

To obtain a copy of "The Combined Sewer Overflow Control Policy," Federal Register Notice 59 FR 18688 (EPA 830-Z-94-001), contact NCEPI, 11029 Kenwood Rd., Bldg. 5, Cincinnati, OH 45242; fax

(513) 891-6685.

For more information on CSOs, contact Ross Brennan, National CSO Program Manager, EPA Office of Wastewater Enforcement and Compliance, (202) 260-6928; fax (202) 260-1460.



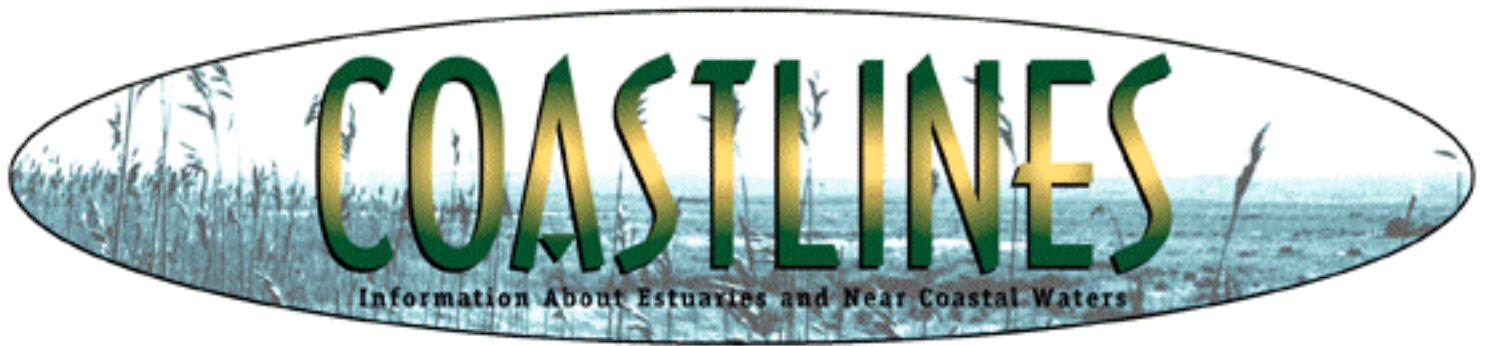
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Key Components of the Policy

Under the policy, municipalities would immediately implement nine minimum controls:

- Proper operation and regular maintenance programs for the sewer system and CSOs.
- Maximum use of the collection system for storage.
- Review and modification of pretreatment requirements to assure CSO impacts are minimized.
- Maximization of flow to the municipal sewage treatment plant for treatment.
- Prohibition of CSOs during dry weather.
- Control of solid and floatable materials in CSOs.
- Pollution prevention.
- Public notice to ensure that the public receives adequate notification of CSO occurrences and impacts.
- Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls.



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Long Island Sound Computer Model Approved

The Long Island Sound Study (LISS) has a new tool expected to play a pivotal role in solving the problem of nitrogen-caused hypoxia, a condition that periodically renders portions of the Sound inhospitable to marine life. The computer model of the Sound (known as LIS 3.0), which was completed and approved in October, will assist environmental managers in assigning priorities for nitrogen reductions in different geographic areas in order to achieve the lowest cost and most beneficial effects overall.

"The model is now capable of accurately depicting the complex interaction patterns of water currents and pollutants in the Sound and will enable environmental managers to predict and assess the effects of alternative management actions for nitrogen reduction," noted Mark Tedesco, Director of EPA's Long Island Sound Office.

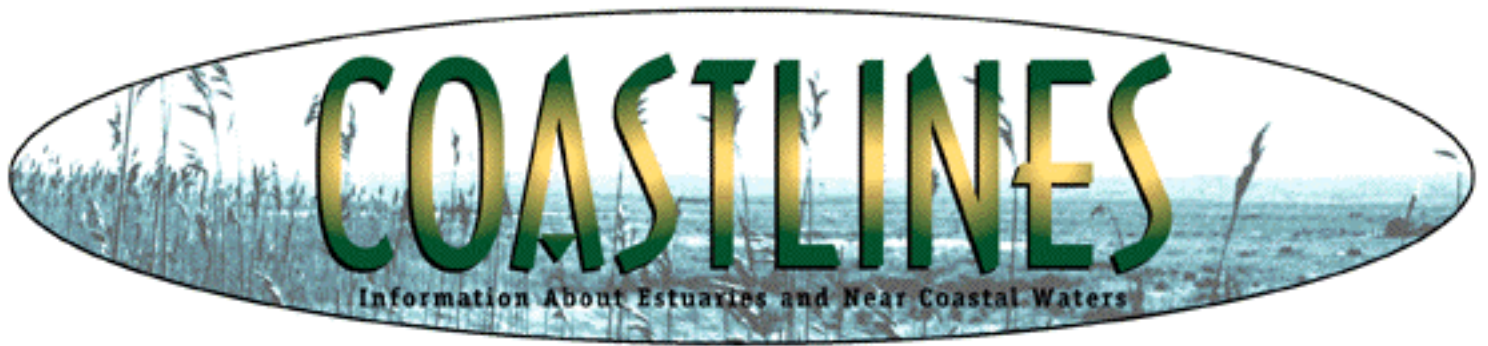
Model Evaluation Group chairman Jay L. Taft of Harvard University explained that the model links the sources and impacts of nutrient loads. "It delineates the movement of nitrogen with the water and projects the late summer oxygen decline attributable to the various nitrogen inputs," said Taft. "We

expect the model to clarify the relative impacts of nutrients, especially nitrogen, originating from specific geographic management zones established around the region, thereby greatly reducing the uncertainty inherent in predictions of causal relationships within complex natural systems like Long Island Sound."

The model will now be used to guide managers in moving beyond the interim actions of the Comprehensive Conservation and Management Plan to test the effects on dissolved oxygen of nitrogen reductions from each of 15 nitrogen management zones.

Target figures for the amount of nitrogen allowable from each zone will be established through the use of the model, based on benefits to the ecosystem and cost effectiveness. Within each zone, the options and costs for reducing nitrogen loads from all point and nonpoint sources of pollution can then be identified and a feasible mix of these reductions developed by the states and local governments.

Contact: Joseph Blumberg, Public Outreach Coordinator of the Long Island Sound Study, (203) 977-1543.



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Hypoxia in Long Island Sound

Designated by the LISS as *the* priority water quality problem in the Sound, hypoxia, or low dissolved oxygen, results from a combination of natural and human-induced events. Nitrogen sources such as sewage treatment plant effluent, storm water runoff, and atmospheric deposition over-fertilize the Sound, fueling the growth of algae. These microscopic plants ultimately sink to the bottom and decay, depleting the oxygen in the bottom waters and leading to potentially serious consequences for marine life in the lower zone.

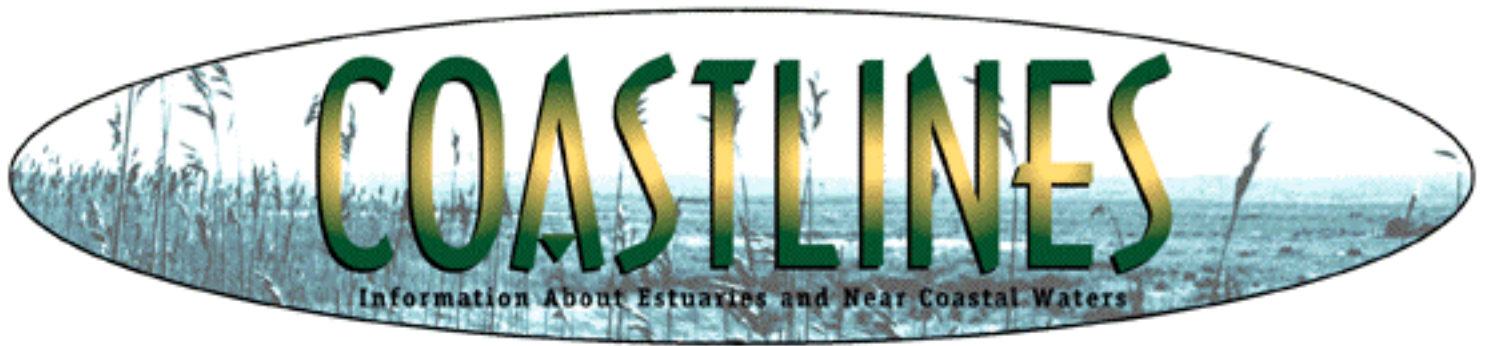
The physical, chemical, and biological factors involved in hypoxia are extremely complex. To understand hypoxia and recommend management actions that would be both effective and cost-efficient, the LISS was convinced that a scientific approach utilizing modeling was needed to help sort out the complex system the Sound represents. The modeling framework is quite similar to that used for Chesapeake Bay, Boston Harbor, Massachusetts Bay, and the Delaware Estuary.

Contacts:

Delaware Estuary - Andy Johnson, (800) 445-4935;

Mass Bays - Susan Schneider, (617) 727-9530x408;

Chesapeake Bay - Lewis Linker, (800) 968-7229.



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The Texas Model

Following a 1985 State mandate, the Texas Water Development Board (TWDB) began studying fresh water inflow needs of the seven estuaries in Texas. The major tool developed by the Board, the Texas Estuarine Mathematical Programming Model (TxEMP), is being designed to allow managers to optimize fresh water inflows that are required for adequate sediment and nutrient loading of an estuary, and for maintenance of the estuary's salinity gradient and fishery production (for which there are 30 years of data).

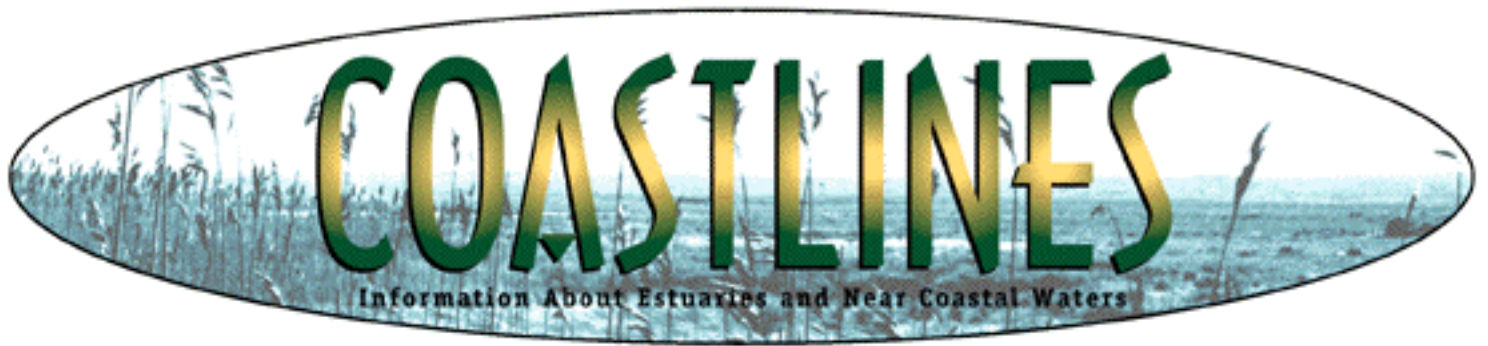
"The inflow of fresh water is widely recognized as an essential factor influencing the biological productivity of estuarine areas," said Gary Powell, director of the Bays and Estuaries Program at the TWDB. The goal of the Model is to meet all management constraints, limits, and objectives of the State mandate, explained Powell.

In Corpus Christi Bay, there are one million acre feet of fresh water inflow during high flows, and 20,000 acre feet during drought years. Preliminary modeling, completed in 1992, showed that 97,000 acre feet are needed to maintain a healthy ecosystem. Based on the preliminary findings, the Texas Natural Resources Conservation Commission issued a five-year interim order requiring a minimum fresh water inflow of 97,000 acre feet. The final model for Corpus Christi Bay and for the other six estuaries will be

completed by 1998.

Powell concluded, "The model is being developed as a tool for decision-making on the fresh water inflow needs of Texas estuaries, and to help establish long-term objectives for maintaining and enhancing an ecologically sound estuarine environment in these valuable coastal areas."

Contact: Gary Powell, Texas Water Development Board, (5112) 445-1463.



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From Christmas Trees to Marshland

The June-July 1993 issue of Coastlines reported on a project in Jefferson Parish, Louisiana, where 130,000 donated Christmas trees were being used to construct marshland in abandoned water canals. According to Marnie Winter, Director of the Jefferson Parish Environmental and Development Control Department, all signs indicate that the goals of the project will be met and even exceeded. Her status report follows.

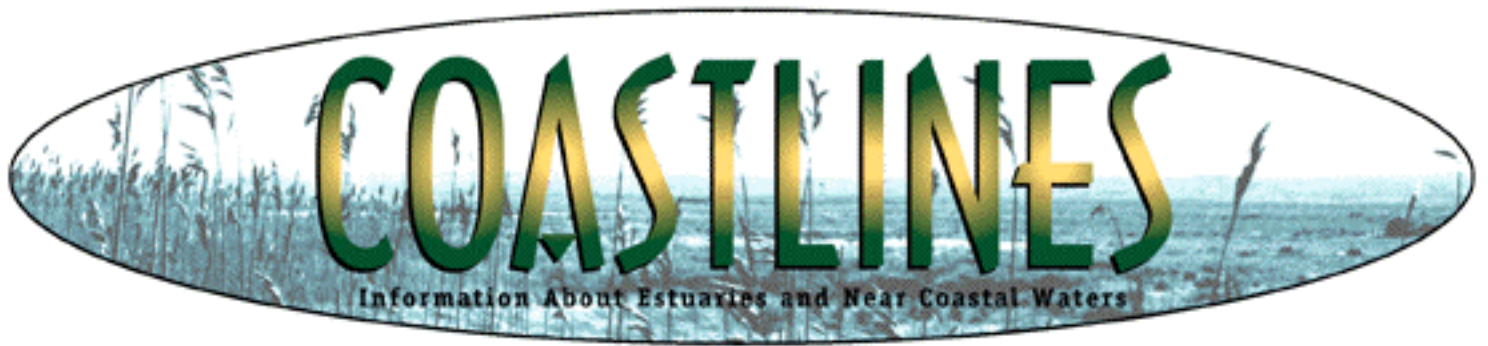
Our preeminent goal, creation of floating marsh in abandoned oil field canals, is becoming evident in two test canals as compared with an adjacent canal that is being used as a control. The two test canals received fertilizer in 1993, while in 1994 only one canal was fertilized on a regular basis. Water quality is being monitored by regular sampling for salinity, dissolved oxygen, pH, phosphate, nitrate, and alkalinity.

In the spring of 1994, during our botanical survey, it was noted that emergent marsh had begun to form along the banklines of all cells in one of the canals (each canal is divided into four cells by brush fences), and in the middle of one cell in the same canal. It was expected that marsh would form at the banklines first because that is the shallowest point, but the Christmas trees placed in the middle of the canal have already formed a base that allows for floating marsh attachment.

All cells of the other test canal have prolific growth of alligator weed and water hyacinths, yet also have the greatest amount of vegetative diversity. Duck potato, bull tongue, milfoils, and duckweed are common within each cell, and wild rice and cattails are common at the shoreline. Snakes, alligators, birds, frogs, ducks, and many insects are also inhabiting the newly formed marsh.

The key to success is the matrix of brush that forms the cells and provides nature its first link in the floating marsh process - a passive anchorage. This anchorage restrains the vegetation and prevents breakup of the mat. Large birds, including egrets and cranes, are readily supported on the newly formed mat. We feel confident that, barring a major hurricane, this project will exceed expectations by its conclusion in the spring of 1995.

For further information, contact Marnie Winter, Director, Jefferson Parish Environmental and Development Control Department, (504) 838-4230.



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Upcoming Local Government Workshops on Coastal and Resource Protection

U.S. EPA's Office of Wetlands, Oceans, and Watersheds, Oceans and Coastal Protection Division, has scheduled the next round of coastal resource protection tools workshops. The workshops are intended to familiarize government officials, managers, and state and local technical experts with watershed protection techniques and specific successes of the National Estuary Program and other restoration and protection efforts. Dates and contacts for the workshops listed below.

- New Orleans, LA
February 7 & 8, 1995
Contact: Ms. Terry Branch, U.S.
EPA Region 6, (214) 665-6667.
- Eureka, CA
March 2 & 3, 1995
Contact: Ms. Sunny Kuegle, U.S.
EPA Region 9, (415) 744-2019.
- Maui, HI

March 14 & 15, 1995

Contact: Ms. Sunny Kuegle, U.S.

EPA Region 9, (415) 744-2019.

- Naples, FL

March 27 & 28, 1995

Contact: Ms. Connie Alexander, U.S.

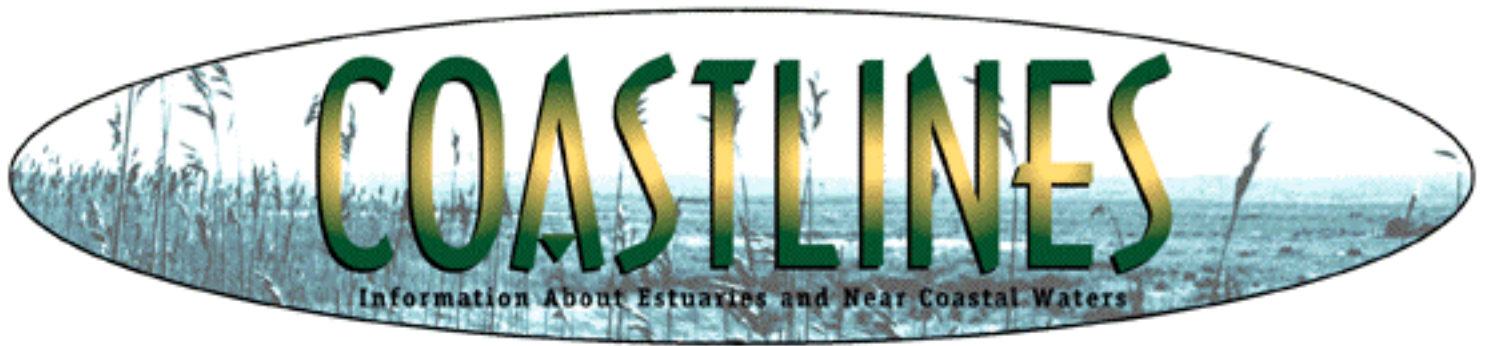
EPA Region 4, (404) 347-1740.

- Apalachicola, FL

March 30 & 31, 1995

Contact: Ms. Connie Alexander, U.S.

EPA Region 4, (404) 347-1740.



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Coastlines on NPS BBS

First Internet, Now the NPS BBS

Coastlines can now be accessed in electronic form from the Nonpoint Source Bulletin Board System (NPS BBS). Accessible to anyone with a computer and modem, the BBS provides timely nonpoint source information, a nationwide forum for open discussion, and the ability to exchange computer text and program files. Sponsored by EPA, the NPS BBS has a broad watershed focus and is easy to use; and, there's no user fee. The NPS BBS phone number is (301) 589-0205. The telecommunication parameters are no parity, 8 bits, and 1 stop-bit (N-8-1).



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About Coastlines

Coastlines is a publication of the Alliance for the Chesapeake Bay, Inc. It is produced in cooperation with the U.S. Environmental Protection Agency, Office of Wetlands, Oceans and Watersheds, under grant #CX-816-857-913. The contents of this document do not necessarily reflect the views and policies of EPA, nor does mention of trade names or commercial products constitute endorsements or recommendations of use. The Executive Director of the Alliance is Frances H. Flanigan.

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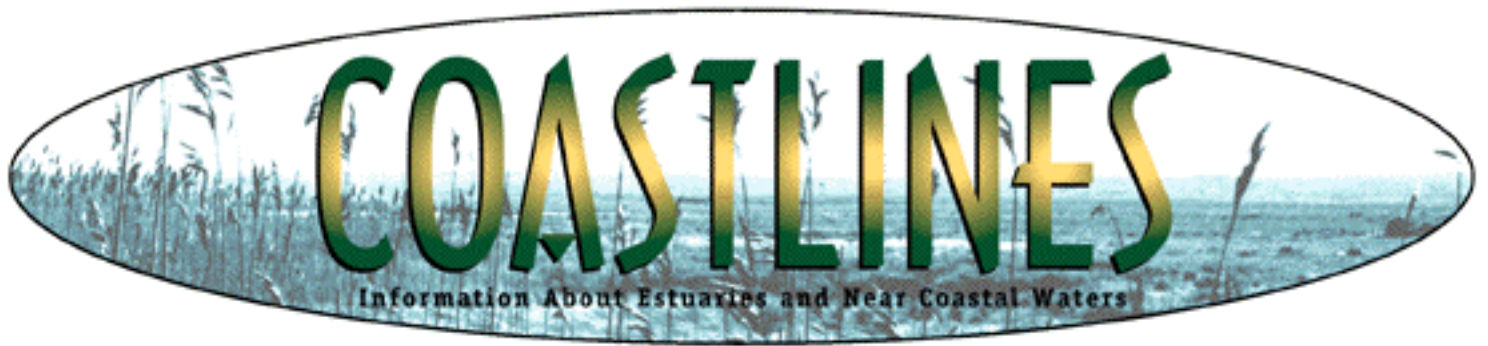
Please send your questions or ideas to:

Coastlines Information Exchange, P.O. Box 7, Barnstable, MA 02630

telephone (508) 362-5570

facsimile (508) 362-5335

Please include your name, address, and daytime phone number (for verification).

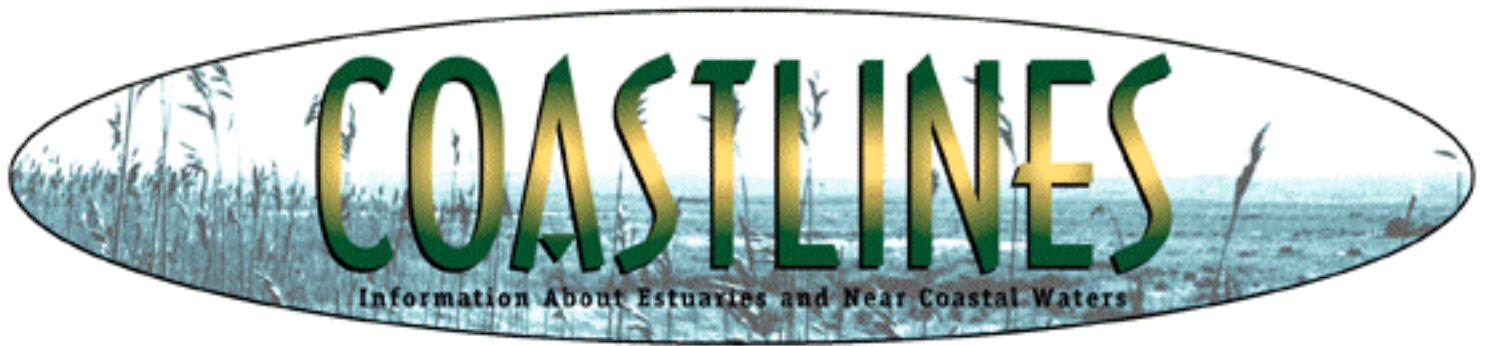


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Correction

In an article entitled "Vessel Pumpout and Estuary Health" in the Fall 1994 *Coastlines*, we displayed what was thought to be the new national pumpout symbol. In reality, according to Joel Salter of EPA, the symbol shown is one of three being considered as the national symbol. Final selection of a symbol and slogan will take place in 1995. We apologize for the error, and will print the selected symbol and slogan when they are chosen.



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Coast to Coast

NEP News

Education in "Watersheds to Bays"

The Massachusetts Bays Program recently certified 105 teachers and other educators to teach the "Watersheds to Bays" program in their classrooms this year. Educators of students in grades 4-9 from both public and private schools, plus environmental educators from a host of organizations including Massachusetts Audubon and the New England Aquarium, completed a series of workshops and seminars during the 1993-1994 school year.

"The teacher training program is really a great way to share new ideas and build upon existing efforts in water education," said Betsy McEvoy, Director of Public Outreach and Education for the Massachusetts Bays Program. "There is so much information in the schools about tropical rain forests and coral reefs that we thought it was time to start educating teachers about the resources in their own backyard."

Led by two instructors affiliated with the University of Massachusetts Cooperative Extension System,

teachers receive "professional development points" toward recertification for doing the training, and more points for those who in turn give future presentations on the subject.

The program links watershed concepts to existing curricula in science and environmental education classes throughout eastern Massachusetts. As a result, teachers are able to immediately apply the concepts learned in the training directly into the classroom. The program used a hands-on approach by providing teachers with classroom activities such as constructing a water cycle, modeling ground water flow, and mapping the watershed area of their school. Sessions also stressed human impacts on water quality and how everyone can help protect the bays.

More than 200 educators have been trained to date in this very well-received program, and the 1994-1995 program got underway in November.

Contact: Susan Schneider at the Massachusetts Bays Program, (617) 727-9530 x 408.

GBNEP Signs off on Galveston Bay Plan

On December 14, 1994, the Galveston Bay National Estuary Program's (GBNEP) Policy Committee signed off on The Galveston Bay Plan, a comprehensive plan intended to guide protection of the Galveston Bay system for the next 20 years.

According to Dr. Frank Shipley, Program Director of the GBNEP, EPA has 120 days to review the plan and recommend final approval and implementation. "I am excited about implementing programs that will protect this bay system and its economic value to our community," said Shipley. "The plan is based on strong research, and we have identified the restoration of habitat and non-point source pollution as two very high priority challenges to tackle first."

Contact: M.A. Bengston, Public Participation Coordinator of the GBNEP, (713) 332- 9937.

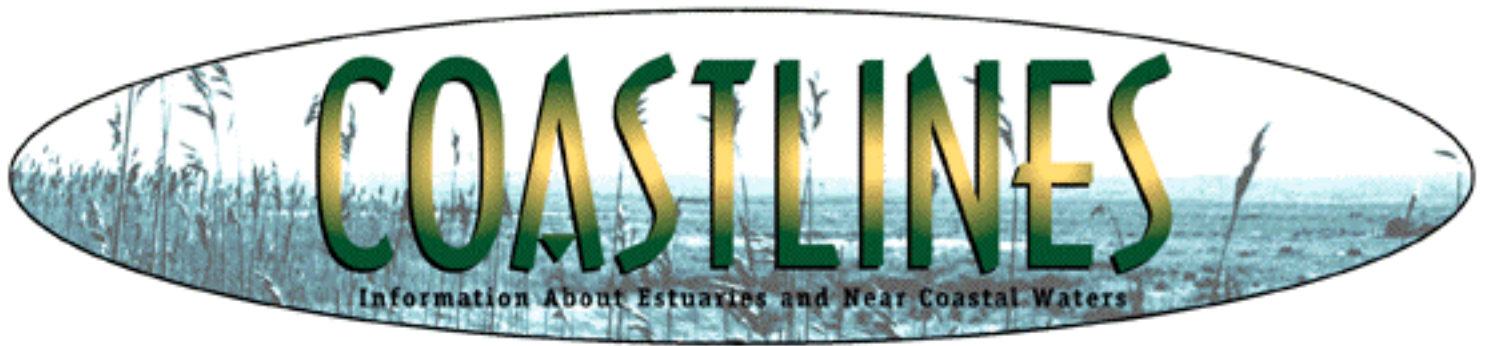
National Estuary Program Coastal Technology Transfer Conference

"Saving Bays and Estuaries: Sharing Tactics," a conference hosted by EPA and the Barataria-Terrebonne National Estuary Program, will be held February 13-16, 1995, in New Orleans, Louisiana.

The purpose of the conference is to bring coastal and estuarine managers together with the scientists and researchers to learn about new ways to save our bays and estuaries. The NEP has identified four major environmental problems that are common to most estuaries: nutrients, pathogens, toxic substances, and habitat loss. The conference will be designed to share new approaches for identifying, characterizing, and correcting or preventing these problems, as well as assessing progress in estuarine and coastal

management. Attendance will be limited to selected speakers and NEP representatives.

Contact: Ms. Lynn Woods at the BTNEP, (504) 447-0868; fax (504) 447-0870.



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Information Exchange

Anybody Got a Slug of Sediment?

Tom Lisle, Research Hydrologist at the Redwood Sciences Laboratory in Arcata, California, is looking for places anywhere in the western states to study the movement of a slug of sediment downstream. "Even if we know how much sediment enters a stream at some point, we don't know how fast it will move downstream, how big the change in sediment load will be at some point downstream, or how long elevated sediment loads will last," said Lisle. "Some of us are studying this problem with models and lab experiments, but what is needed most are a few good field examples."

Candidate sites should have the following:

- Clear evidence of a slug of excess sediment in a channel;
- A single, recent or imminent, large input of sediment (thousands of cubic yards);
- A variety of bedload sizes (sand, gravel, or boulders);
- Location in a western state.

The added sediment in the channel must be obvious and thus measurable. However, the single source approach should not preclude cases where a number of inputs has formed an obvious slug in a channel.

Tom would be happy to work independently on a monitoring project at one of these sites or work collaboratively with others. If you have a possible site, call Tom Lisle at (707) 822-3691, or write to the Redwood Sciences Lab, 1700 Bayview Drive, Arcata, CA 95521.

NEP Public Awareness and Participation

The Corpus Christi Bay National Estuary Program would like to know what other NEPs have done successfully to increase public awareness and participation in their programs. Conversely, they'd also like to know what hasn't worked and why. Any information on how to foster substantial and extensive public participation in the process of developing a comprehensive plan would be greatly appreciated.

Please contact Mari Brennan Barrera, Outreach Coordinator, Corpus Christi Bay National Estuary Program, TAMU-CC, Campus Box 290, 6300 Ocean Drive, Corpus Christi, TX 78412, (512) 985-6767; fax (512) 985-6301.



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Publications

Protecting Coastal and Wetlands Resources: A Guide for Local Governments. (187 pp., April 1992). A hands-on guide designed to help elected officials and concerned citizens from coastal communities learn about a variety of approaches for managing their coastal and wetlands resources. The guide contains a comprehensive review of resource management and planning tools as well as 19 case studies. Available free of charge from NCEPI, 11029 Kenwood Road, Building 5, Cincinnati, OH 45242. Ask for document EPA842-R- 92-002.

How to Save a River. (\$18.00, 266 pp., 1994). by David Bolling. This book, subtitled A Handbook for Citizen Action, defines general principles for developing a river protection campaign, including getting organized, planning a campaign, building public support, and putting a plan into action. Examples of successful river protection campaigns are included. Available from River Network, P.O. Box 8787, Portland, OR 97207- 8787, (800) 423-6747.

Agriculture and the Environment. (4 fact sheets, August 1993). A folder containing fact sheets that address watershed management and nonpoint source pollution in agricultural areas. Available free of charge from NCEPI, 11029 Kenwood Road, Building 5, Cincinnati, OH 45242. Ask for document EPA840-F-93-001.

Xeriscape Landscaping: Preventing Pollution and Using Resources Wisely. (April 1993). Describes landscaping and gardening methods that promote pollution prevention, water conservation, and sustainable resources, including public/private partnerships to promote resource efficient landscaping. Available free of charge from NCEPI, 11029 Kenwood Road, Building 5, Cincinnati, OH 45242. Ask for document EPA840-B-93-001.

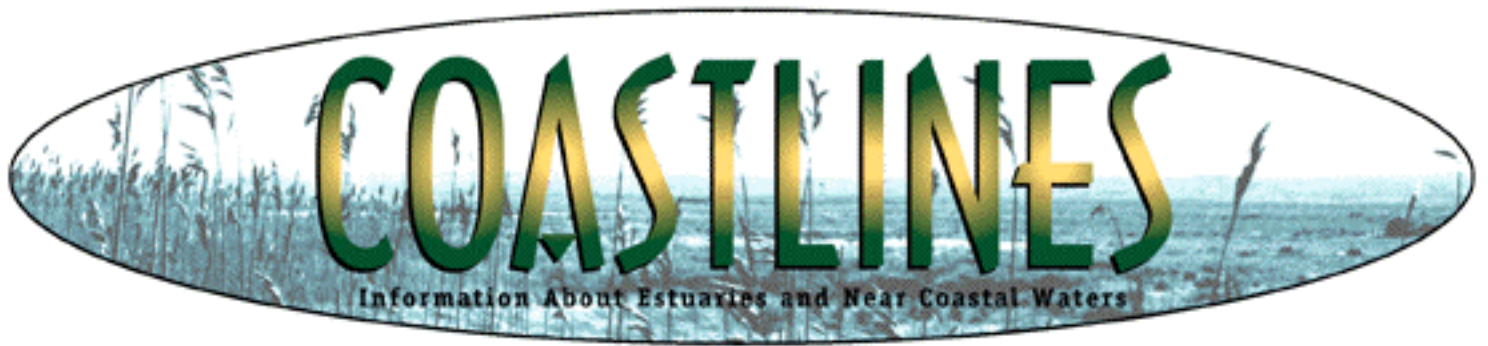
Implementing a Stormwater Management Program. (\$59.95, 192 pp., January 1994). By David S. Pyzoha. Presents a four-step, common sense approach that describes how to create and implement a successful stormwater management program. Includes problem identification, program conception and creation, and final implementation using the fundamental elements of policy creation, institutional planning, technical planning, financial planning, and public involvement and awareness. Available from CRC Press, 1 (800) 272-7737; fax 1 (800) 374-3401.

Restoration of Aquatic Ecosystems. (\$39.95, 567 pp., 1992). By the National Research Council. Outlines a national strategy for aquatic restoration, with practical recommendations covering both the desired scope and scale of projects and needed government action. Case studies of aquatic restoration activities throughout the country are featured. Available from Island Press, Box 7, Covelo, CA 95428; 1 (800) 828-1302; fax (707) 983-6432.

The Clean Water Act Twenty Years Later. (\$55 hardcover, \$29.95 paperback, 350 pp., October 1993). By Robert W. Adler, Jessica C. Landman, and Diane M. Cameron of the Natural Resources Defense Council. Explores the issues associated with the complex subject of water quality protection in this assessment of the successes and failures of the Clean Water Act over the past twenty years. In addition to examining traditional indicators of water quality, the authors also consider how health concerns of the public have been addressed, and present a detailed examination of the ecological health of our waters. Available from Island Press, Box 7, Covelo, CA 95428; 1 (800) 828-1302; fax (707) 983-6432.

Wetlands and Coastal Zone Regulation and Compliance. (\$125, 208 pp., 1993). By Stephen M. Silverberg and Mark S. Dennison. This book reviews federal and state coastal zone regulations and fresh and tidal wetlands laws within the context of other environmental and administrative mandates and procedures. It outlines successful strategies for obtaining permits, taking into account the complicated interplay of federal and state regulations. Available from Island Press, Box 7, Covelo, CA 95428; 1 (800) 828-1302; fax (707) 983-6432.

Fundraising, Hands-On Tactics for Nonprofit Groups. (\$32.95 hardcover, \$16.95 paperback, 336 pp., 1993). By L. Peter Edles. This hands-on operation manual shows nonprofit professionals and volunteers how to design and run successful fund raising campaigns for their organizations. It shares insider tips for training solicitors, cultivating donors, and organizing gift drives that capture the emotions and imaginations of potential supporters. Available from Island Press, Box 7, Covelo, CA 95428; 1 (800) 828-1302; fax (707) 983-6432.



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Calendar

February 23-24

Water, Nitrogen, and People: An International Conference. Everett, Washington. Sponsored by Washington State University Cooperative Extension, Washington State Department of Health, BC Environment, and U.S. EPA. Focuses on sustainability of the water resource and understanding the effect of nitrogen on water. Targets health officers, land use planners, public policy makers, agricultural commodity groups, and agricultural and water quality professionals. Contact Craig MacConnell, (206) 676-6736.

February 28-March 3

International Erosion Control Association 26th Annual Conference and Trade Exposition. The Westin Peachtree Plaza Hotel, Atlanta, Georgia. This educational forum will bring together world experts on the subject of soil erosion and sediment control. Subjects to be covered include: low tech erosion control, slope stabilization, coastal and shoreline erosion control, erosion control for landfills, streambank stabilization and channel protection, and erosion control and watershed management. Contact John T. Price, (616) 530-8230; fax (616) 530-2317.

March 29-April 1

The Third Gulf of Mexico Symposium, "Steering a Course to the Future." Corpus Christi, Texas. Presented by the Gulf of Mexico Program. The symposium will be an opportunity for scientists, teachers, students, citizens, industry, and government officials to discuss plans and progress in addressing eight main issue areas: marine debris, toxics and pesticides, habitat degradation, nutrient enrichment, coastal erosion, public health, living aquatic resources, and freshwater inflow. Call 1(800)699-4853.

April 3-7

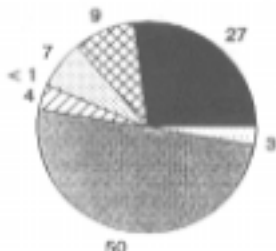
Technology Advances for Wetlands Science. Clarion Hotel, New Orleans, Louisiana. This national interagency workshop on wetlands is sponsored by the U.S. Army Corps of Engineers as part of the Wetlands Research Program. The theme emphasizes how research impacts wetlands technology and management strategies and how wetlands will be perceived by the public and wetlands professionals in the future. Additional information is available from the U.S. Army Engineer Waterways Experiment Station, (601) 634-2569; fax (601) 634-3664.

April 23-26

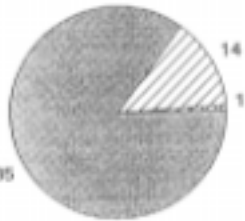
Water in the 21st Century: Conservation, Demand, and Supply. Salt Lake City, Utah. The annual spring symposium of the American Water Resources Association will provide an opportunity for water resource planners and managers, environmentalists, ecologists, educators, lawyers, engineers, sociologists, and economists to report experiences, share progress, and disseminate information that is critical to successfully address the important water conservation, demand, and supply issues of the 21st century. Contact the AWRA, (703) 904-1225.

TAMPA BAY

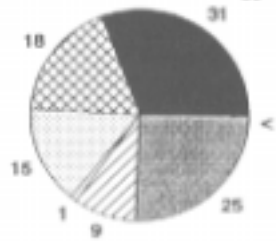
Percent of Total Annual Loads



Total Nitrogen



Total Suspended Solids



Total Phosphorus

